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HOW TREES HOLD BACK WATER

A radio discussion by John Baker, Radio Service, and Elizabeth Pitt, Forest Service, broadcast Monday, February 27, 1939, in the Department of Agriculture portion of the National Farm and Home Hour Program by the National Broadcasting Company and a network of 100 associated radio stations.

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JOHN BAKER:

U. S. Department of Agriculture

Elizabeth Pitt is here . . . and that means we are going to hear something about the various phases of the work the United States Forest Service is doing. . . . the work that this agency is carrying on to make forests more useful to human beings. What are you going to tell us about today, Betsy?

ELIZABETH PITT:

Well, John, I was thinking about Joaquin Miller and Captain Eads . . .

BAKER:

Joaquin Miller and Captain Eads. Well, let's see now . . . Joaquin Miller was a poet who wrote some very good things . . . but Captain Eads . . . I never heard of him.

PITT:

Captain Eads was an engineer who built jetties at the mouth of the Mississippi River back in the eighties. Joaquin Miller told about him in a paper for the Sixth American Forestry Congress which met in Springfield, Illinois, in 1897. He had a very interesting time with Captain Eads inspecting jetties at the mouth of the Mississippi.

BAKER:

Why, that was about 60-65 years ago . . .

PITT:

Yes. . . Even then they were wrestling with the flood control problem. Joaquin Miller said that one morning Captain Eads threw a bucket over the side of the boat and drew up several gallons of dark mud and water . . . and then he said to Mr. Miller "There is a mixture of one-tenth Iowa, one fraction Kentucky and so on through about fifteen States that drain into the Mississippi River. Only about five tenths is pure water." And then he dumped the ugly mixture back into the Gulf of Mexico, and he said: "We've begun at the wrong end, sir."

BAKER:

The wrong end? Did he mean the wrong end of the river or the wrong end of the problem in general?

PITT:

Both. It's the same thing. He said that the other end of the Mississippi had drowned out the mouth . . . that the leaves and grasses should have been left on the ground as Nature placed them . . . He said if the leaves had been left alone, there'd have not been so much need for his jetties.

BAKER:

Captain Eads was an engineer you said . . . and he was talking like that?

PITT:

Sounds more like a forester than an engineer, doesn't he.

BAKER:

He certainly does. Or a soil conservation specialist.

PITT:

Well, I think that was the reason Joaquin Miller reported his experience with Captain Eads in such detail to the American Forestry Congress in 1887. He was deeply impressed by the vision of the flood control problem that he received from this remarkable engineer, and he wanted to pass it along to the foresters . . . he saw that the problem involved something besides dams and levees, and other massive engineering feats. One of the best engineers of the day had told him so.

Well, Congress has backed up his judgment by enacting flood-control legislation that covered other things besides the improvement of rivers and water ways.

PITT:

I suppose you are thinking about the Omnibus Flood Control Act of 1936 that called on the War Department and the Department of Agriculture to get together in their flood-control efforts. Captain Eads has been dead a half a century but he would have approved of that legislation because it aims at the problem from both ends.

BAKER:

Yes. I remember particularly that it directs the Department of Agriculture to make preliminary examinations and surveys of certain watersheds that affect the major drainage basins of the United States, doesn't it?

PITT:

Yes. The Forest Service, the Soil Conservation Service and the Bureau of Agricultural Economics are doing that . . . and the idea is to find out how much vegetation really affects the run-off of water, and what can be done to help solve the problem at the source of the trouble.

BAKER:

Well, that ought to be an interesting problem. What are the latest developments?

PITT:

Well, the preliminary examinations and surveys have been started and the work is well under way on over 100 watersheds. Some of the main ones are the Merrimac in New England, the Coosa in Georgia, the Upper Gila in Arizona, the Boise in Idaho, and the Los Angeles group in Southern California.

Of course the Forest Service has been thinking and planning along these lines for years but the work has always been handicapped by a lack of authority and funds.

BAKER:

Well, at this stage, does it look as if the forests have a real influence on the flood situation . . . in other words do the trees and the forest litter hold back much water?

PITT:

Yes. . . that's definitely established. Foresters don't believe that forests can entirely prevent great floods in large river basins; but they do think that forests greatly reduce floods in small watersheds. And if you reduce small floods, it should certainly cut down the big ones.

BAKER:

Well, that's right in line with what the foresters in Europe think, isn't it?

PITT:

Absolutely. It has been a recognized principle over there for a long time that to bring a river system under permanent control, work must be done at its source and in the small branches that feed the stream, as well as in the main channels. In other words, a good forest cover must be reestablished or good farming practiced at the headwaters of the stream.

BAKER:

Well, nothing binds soil together like the root system of trees, and nothing soaks up water like leaves and moss.

PITT:

That's right. The forest Service has done a lot of experimental work which proves that C. L. Forsling, the director of forest research says that decayed leaves and other debris on the ground in the forest cause the soil to absorb 8 to 10 times as much water as bare soil.

BAKER:

Yes--and the Soil Conservation Service has found that in certain farming areas the loss of water from clean-tilled fields was 7 times greater than the loss from fields protected by close-growing crops--- that is, crops like legumes, grass-----and woods.

PITT:

When it comes to keeping soil from washing away, nothing has ever been found that can hold it together like the root systems of plants and trees.

BAKER:

I get into the woods enough to know that. Just try pulling up a few plants in the garden--- The fine network of tiny roots goes in every direction--and do they hang on!

PITT:

Certainly--that's what Nature made 'em for---and that's what Captain Eads meant 65 years ago when he was scooping buckets of dark mud out of the Gulf of Mexico and saying to Joaquin Miller that we'd have to start at the other end.

BAKER:

Well--it's good to know that we're following his ideas---and that at last the different agencies of the department of agriculture and the War Department are working together on the problem.

: Elizabeth Pitt, of the Forest Service, has told us from time to time of many different activities of the branch of government she represents--- and I think you'll agree that this story she's told us about the studies and work in flood control is one of the most interesting--and most important of the bunch.

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